

[SPECIFICATION]

[TITLE OF THE INVENTION]

STRUCTURE OF TUB COVER IN AUTOMATIC WASHING MACHINE

5

[BRIEF DESCRIPTION OF THE DRAWINGS]

FIG. 1 is a disassembled perspective view illustrating a structure of a tub cover in a general washing machine.

FIG. 2 is a sectional view illustrating main parts of a tub cover in a general washing machine.

FIG. 3 is a sectional view illustrating a structure of a washing machine according to the present invention.

FIG. 4 is a disassembled perspective view illustrating a structure of a tub cover in a washing machine according to the present invention.

FIG. 5 is a view for explaining an operation principle according to the first embodiment of the present invention.

FIG. 6 is a view for explaining an operation principle according to the first embodiment of the present invention.

FIG. 7 is a view showing a guide rib formed in a lower tub cover according to the second embodiment of the present invention.

FIG. 8 is a view showing a guide rib formed in a lower tub cover according to the third embodiment of the present invention.

FIG. 9 is a disassembled perspective view illustrating a structure of a tub cover fitted to a washing machine according to the fourth embodiment of the present invention.

FIG. 10 is a view for explaining an operation principle according to the fourth embodiment of the present invention.

FIG. 11 is a view for explaining an operation principle according to the fourth embodiment of the present invention.

5

Description of reference numerals for main parts in the drawings

101: washing machine	102: outer tub
103: inner tub	104: driving shaft
105: motor	111: upper tub cover
10 112: fore end	121: lower tub cover
122: fore end	123: guide rib
124: regular direction guide means	125: reverse direction guide means
126: curved portion	131: passage

15 **[DETAILED DESCRIPTION OF THE INVENTION]**

[OBJECT OF THE INVENTION]

[FIELD OF THE INVENTION AND DISCUSSION OF THE RELATED ART]

The present invention relates to a washing machine, and more particularly, to a structure of a tub cover in an automatic washing machine, in which a regular direction
20 guide means and a reverse direction guide means are formed in a guide rib of a lower tub cover so as to stably guide washing water between an outer tub and an inner tub to the inner tub.

As shown in FIG. 1 and FIG. 2, Application No. 35708 filed in 1998 shows a structure of a tub cover in an automatic washing machine according to the related art

(same applicant). The related art washing machine includes an inner rounding portion 7, an outer rounding portion 5 and a plurality of guide ribs 8. At this time, the inner rounding portion 7 is formed in a lower tub cover 6 for providing washing water being pumped up between an outer tub 2 and an inner tub 3 according to a centrifugal force by a high speed rotation of the inner tub 3 to the exterior of the inner tub 3. The outer rounding portion 5 is formed in an upper tub cover 4 for preventing the washing water from being flown out, and the plurality of guide ribs 8 are connected between the inner and outer rounding portions 7 and 5 so as to generate a passage 9 of the washing water in a state of supporting the inner and outer rounding portions 7 and 5.

10 The related art washing machine is operated as follows.

First, laundry is put in the inner tub 3 of the washing machine, and a user put a starting button, thereby providing the washing water. When the washing water is provided at a predetermined amount in the inner tub 3 and the outer tub 2, the supply of the washing water is stopped.

15 The washing process is performed by a rotation of a motor. That is, a driving shaft is rotated in regular and reverse directions according to the rotation of the motor, so that the inner tub 3 of the washing machine is rotated in regular and reverse directions, thereby washing the laundry by the passage of the washing water.

20 At this time, the number of the rotations of the motor has to be increased for performing a penetration washing. If the number of the rotation of the motor increases, the number of the rotation of the inner tub 3 increases, thereby increasing the centrifugal force. Accordingly, the laundry is positioned on wall surfaces of the inner tub 3, and the washing water penetrates the texture of the laundry. At this time, the dirt of the laundry is cleaned since the washing water penetrates the texture of the laundry.

Then, the washing water penetrating the texture of the laundry is discharged to the outer tub 2 through a drain hole of the inner tub 3. That is, the washing water being discharged to the outer tub 2 rises upwardly along a space between the inner tub 3 and the outer tub 2 according to the centrifugal force of the high speed rotation of the inner tub 3. As shown in FIG. 2, the washing water rising between the inner tub 3 and the outer tub 2 is provided to a space between the lower tub cover 6 and the outer tub 2, and is discharged to a discharge hole 10 through the passage 9 between the lower tub cover 6 and the upper tub cover 4. At this time, the washing water being provided through the passage 9 is discharged to the discharge hole 10 by the inner rounding portion 7 formed on the lower tub cover 6.

However, the related art washing machine has the following disadvantages.

The plurality of guide ribs 8 are formed in a straight line between the lower tub cover 6 and the upper tub cover 4, so that the washing water hits on the plurality of the guide ribs when the washing water is pumped up.

Accordingly, it is hard to provide the washing water in a large amount, thereby deteriorating pumping function and washing function.

[TECHNICAL TASKS TO BE ACHIEVED BY THE INVENTION]

Accordingly, the present invention is directed a penetration type washing machine that substantially obviates one or more of the problems due to limitations and disadvantages of the related art.

An object of the present invention is to provide a penetration type washing machine, in which a washing water being pumped between an inner tub and an outer tub is guided to the inner tub by lower and upper tub covers, so that the washing water is

provided to the inner tub in a large amount, thereby improving a pumping efficiency and a washing efficiency.

To achieve these and other advantages and in accordance with the purpose of the present invention, as embodied and broadly described, the penetration type washing machine according to the present invention includes regular and reverse direction guide means for guiding washing water to a plurality of guide ribs formed in a lower tub cover according to the rotation direction of the inner tub, and a curved portion connecting the regular direction guide means to the reverse direction guide means for providing the washing water in the same direction of the rotation direction of the inner tub.

[PREFERRED EMBODIMENTS OF THE INVENTION]

FIG. 3 to FIG. 11 illustrate a washing machine according to the present invention.

The washing machine 101 includes a washing water guide means that is formed for smoothly providing the washing water being pumped between an inner tub 103 and an outer tub 102 to the inner tub 103 by a centrifugal force according to a high speed rotation of the inner tub 103.

The washing water guide means includes a regular direction guide means 124 and a reverse direction guide means 125. The regular direction guide means 124 is formed in a guide rib 123 of a lower tub cover 121 for guiding the washing water between the inner tub 103 and the outer tub 102 during the regular direction rotation of the inner tub 103. The reverse direction guide means 125 is formed in the guide rib 123 for being opposite to the regular direction guide means 124 so as to guide the washing water between the inner tub 103 and the outer tub 102 during the reverse direction

rotation of the inner tub 103. Also, the regular and reverse direction guide means 124 and 125 are formed in "人" shape. Furthermore, the washing water guide means includes a curved portion 126 connecting the regular direction guide means 124 to the reverse direction guide means 125 for providing the washing water guided by the regular and reverse direction guide means 124 and 125 to the inner tub 103 in the same direction as the rotation direction of the inner tub 103.

Also, a guide rib 123 extends to fore ends 112 and 122 of lower and upper tub covers 121 and 111 for guiding the washing water to a discharge hole 132 formed by the lower and upper tub covers. The guide rib 123 is formed to a center portion of a passage 131 of the lower and upper tub covers 121 and 111 for guiding the washing water to the center portion of a passage 131 formed by the lower and upper tub covers 121 and 111, mixing and providing the washing water.

An operation of the washing machine according to the present invention will be explained as follows.

FIG. 3 is a sectional view illustrating the washing machine according to the present invention. Referring to FIG. 3, laundry is put into the inner tub 103 of the washing machine 101, and a starting button is pressed so as to provide the washing water. When the washing water is provided in the inner and outer tubs 103 and 102 at a predetermined degree, the supply of the washing water is stopped. Then, a washing process is performed by rotations of a motor 105. That is, a driving shaft 104 is driven at regular and reverse directions according to the regular and reverse direction rotation of the motor 105, thereby rotating the inner tub 103 in the regular and reverse directions. Accordingly, the laundry is cleaned by the regular and reverse direction rotation of the inner tub 103.

At this time, the number of the rotation of the motor 105 has to be increased for performing a penetration washing. If the number of the rotation of the motor 105 increases, the number of the rotation of the inner tub 103 increases, thereby increasing a centrifugal force. Accordingly, the laundry is positioned on wall surfaces of the inner tub 103, and the washing water penetrates the texture of the laundry. At this time, the dirt of the laundry is cleaned since the washing water penetrates the texture of the laundry.

Then, the washing water penetrating the texture of the laundry is discharged to the outer tub 102 through a drain hole of the inner tub 103. That is, the washing water being discharged to the outer tub 102 rises upwardly along a space between the inner tub 103 and the outer tub 102 according to the centrifugal force of the high speed rotation of the inner tub 103. The washing water rising between the inner tub 103 and the outer tub 102 is provided to a space between the lower tub cover 111 and the outer tub 102, and is discharged to a discharge hole 132 through the passage 131 between the lower tub cover 121 and the upper tub cover 111.

If the inner tub 103 rotates in the reverse direction, the washing water between the inner tub 103 and the outer tub 102 is guided by the reverse direction guide means 124 formed in the guide rib 123 of the lower tub cover 121, and is provided to the inner tub 103 through the passage 131 and the discharge hole 132, as shown in FIG. 6.

The regular and reverse direction guide means 124 and 125 are formed in the guide rib 123 of the lower tub cover 121 as "Λ" shape, so that it is possible to provide the large amount of the washing water to the inner tub 103.

FIG. 7 illustrates a washing machine according to the second embodiment of the present invention. The guide rib 123 extends to fore ends 112 and 122 of the lower and

upper tub covers 121 and 111, so that the guide rib 123 guides the washing water to the discharge hole 132, thereby smoothly providing the washing water.

FIG. 8 illustrates a washing water according to the third embodiment of the present invention. The guide rib 123 is formed at the center portion of the passage 131 of the lower and upper tub covers 121 and 111, so that the washing water is guided at the center portion of the passage 131 by the guide rib 123, and is provided in a mixed state.

FIG. 9 to FIG. 11 illustrates a washing machine according to the fourth embodiment of the present invention. The regular direction guide means 124 formed in the lower tub cover 121 is connected to the reverse direction guide means 125 by the curved portion 126. In this case, if the inner tub 103 rotates in the regular direction, the washing water between the inner tub 103 and the outer tub 102 is guided by the regular direction guide means 124 formed in the guide rib 123 of the lower tub cover 121, simultaneously, is guided by the curved portion 126, thereby providing the washing water in the same direction as the rotation direction of the inner tub 103, as shown in FIG. 10. Meanwhile, if the inner tub 103 rotates in the reverse direction, the washing water between the inner tub 103 and the outer tub 102 is guided by the reverse direction guide means 125 formed in the guide rib 123 of the lower tub cover 121, simultaneously, is guided by the curved portion 126, thereby providing the washing water in the same direction as the rotation direction of the inner tub 103. Accordingly, it is possible to smoothly provide the washing water to the inner tub by the regular and reverse direction guide means 124 and 125 formed in the guide rib 123 of the lower tub cover 121, and the curved portion 126.

BEST AVAILABLE COPY

[ADVANTAGES OF THE INVENTION]

The washing machine according to the present invention has the following advantages.

In the washing machine according to the present invention, the regular and
5 reverse direction guide means for guiding the washing water according to the rotation of
the inner tub are formed in the plurality of guide ribs formed in the lower tub cover.
Also, the regular direction guide means is connected to the reverse direction guide
means by the curved portion, so that the washing water is provided in the same direction
as the rotation direction of the inner tub. Accordingly, the washing water is guided
10 upwardly between the inner tub and the outer tub according to the lower and upper tub
covers, and is provided in a large amount, thereby improving pumping efficiency and
washing function.

15

20